The Impact of Lawn Care Practices on Aquatic Ecosystems in Suburban Watersheds

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In urban and suburban watersheds, pesticides are often detected more frequently and at higher concentrations than in agricultural watersheds. Most of the compounds measured are associated with use on turf grass, which includes golf courses, sports fields and residential lawns. In order to develop public policy and community-based environmental protection programs for pesticide use in suburban watersheds, it crucial to collect data on which use patterns contribute the most chemicals to these streams, and if the levels of chemicals detected are negatively impacting the aquatic ecosystem.

EPA STAR Water and Watersheds (1999) - (R828007)--This investigation has integrated the physical, ecological, and social sciences to understand the impacts of residential lawn care chemicals on aquatic ecosystems at six locations in metropolitan Atlanta as well as on a golf course in the Atlanta area. A team of university researchers and community-based stream monitoring programs monitor pesticide and nutrient loads leaving residential neighborhoods and residue levels in receiving water and sediment of streams (physical/chemical); monitor aquatic organism populations and multiple biological indices in these streams to determine the impact of the lawn care practices (ecological); and work with selected homeowners in these neighborhoods to understand the general beliefs and values they hold of lawns and to observe lawn care practices they display so as to assess the impact “expert” groups have in forming these beliefs (social). Confirmatory laboratory investigations of biological effects from individual and multiple stressors will provide added confidence that observed in-stream toxicity can be tracked to a particular chemical or chemicals.

This work has required the partnership of local regulatory agencies responsible for watershed assessments, golf course superintendentsm and scientists at the U.S. EPA Office of Pesticide Programs and within the pesticide industry.

Results from this research have assisted the office of pesticide programs in establishing regulatory policy on turf products and have provided data that scientists at EPA and within the pesticide industry could use for conducting exposure assessments for pesticides used on turf grass. It has also shown that certain pesticides and their degradation products may be contributing to impairment in suburban streams.